

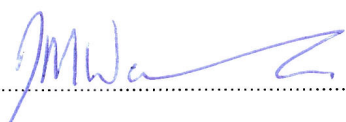
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## Level 2

# Signalling Scheme Technical Approval Process

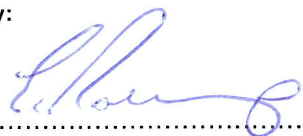
### Endorsement and Authorisation

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## Issue record

| Issue | Date         | Comments                                                                                        |
|-------|--------------|-------------------------------------------------------------------------------------------------|
| 1     | 1 Dec 2008   | First issue as L2 company standard supersedes STPE QMS document and draft MPI work instruction. |
| 2     | 13 July 2011 | General update and process revised in line with the requirements of NR/L2/SIG/30003.            |
| 3     | 2 June 2012  | Minor correction to Numbering of Paragraphs in Appendix A-1                                     |

## Compliance

This Network Rail standard is mandatory and shall be complied with by Network Rail and its contractors if applicable from 1<sup>st</sup> September 2012.

When this standard is implemented, it is permissible for all projects that have formally completed GRIP Stage 3 (Option Selection) to continue to comply with the issue of any relevant Network Rail standards current when GRIP Stage 3 was completed and not to comply with requirements contained herein, unless stipulated otherwise in the scope of this standard.

## Reference documentation

|                                   |                                                                                    |
|-----------------------------------|------------------------------------------------------------------------------------|
| <a href="#">NR/L2/SIG/11201</a>   | Signalling Design Production (Company Standard)                                    |
| <a href="#">NR/L2/SIG/30003</a>   | Engineering Assurance Arrangements for Signalling Engineering Schemes and Services |
| <a href="#">NR/PRC/MPI/ST0029</a> | Signalling Scheme Plan Number Controls                                             |
| <a href="#">NR/L2/INI/02009</a>   | Engineering Management for Projects                                                |
| <a href="#">NR/L2/RSE/0001</a>    | Safety Verification                                                                |
| <a href="#">GI/RT7006</a>         | Prevention and Mitigation of Overruns – Risk Assessment                            |

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## 1 Purpose

This standard defines the Review and Sign-Off process to be adopted in respect of all Signalling Scheme Plans that make alterations or otherwise impact on the functionality of signalling installations on Network Rail Managed infrastructure.

The principal objective of the process is to deliver signalling schemes that are consistent in interpretation and application of principles across the Network. The process is in two stages with a review of the Sketch (or scheme plan in development) at the end of the project options selections stage (GRIP stage 3) to confirm scope and option selection choices. On completion of this review the Route Asset Manager (Signalling) grants Approval in Principle. This review may also provide guidance on emerging issues of Signalling Principles and compliance. A final review takes place at the end of the project development stage (GRIP Stage 4) to confirm that the Approval in Principle has not been compromised and leads to Approved for Construction of the scheme.

This Review process also forms part of the Safety Verification Process, as required by the ROGS regulations or TSIs (as appropriate). The CiP or NOBO, will require submission of the documentation reviewed and approved in accordance with this document as part of the reviews mandated by [NR/L3/RSE/0001](#). The ROGS reviews will normally take place at the end of the option selection (GRIP3) and single option development process (GRIP4).

This document supports the requirements of existing group or company standards particularly those relating to the signalling design process [NR/L2/SIG11201](#) and [NR/L2/SIG/30003](#).

## 2 Scope

The process is to be applied to all Works affecting Network Rail Signalling infrastructure. The Network Rail Designated Project Engineer (defined in [NR/L2/INI/02009](#)) shall be responsible for application of this process.

## 3 Definitions

|      |                                                                                                                                                                                                                                                              |
|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| AFC  | Approved For Construction; status of a signalling scheme plan defined in section 4.2 of this document.                                                                                                                                                       |
| AIP  | Approval In Principle; status of a signalling scheme plan defined in section 4.1 of this document.                                                                                                                                                           |
| MSRP | Major Scheme Review Panel                                                                                                                                                                                                                                    |
| POIS | Project Operations Interface Specialist – a member of the signalling project group employed to provide railway operations expertise. In some areas this role may be fulfilled by Signalling Schemes Specialist employed by Operations and Customer Services. |

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|                             |                                                                                                                                                                                                                                       |
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| PRS                         | Project Requirements Specification, a document produced to define the technical and operational requirements of a Project.                                                                                                            |
| Professional Head (S&T)     | The individual with Network Rail accountable for setting Engineering Standards and Policy.                                                                                                                                            |
| RAM (Signalling)            | Route Asset Manager (Signalling) The Engineer with responsibility for overall asset management of signalling (& telecommunications) infrastructure with the Network Rail route organisation.                                          |
| Reviewing Engineer          | An Engineer with specific delegation to review and sign off scheme plans under Minor Scheme Plan Review process defined herein.                                                                                                       |
| SDG                         | Signalling Design Group a team within Investment Projects primarily delivering signalling Design work.                                                                                                                                |
| Signalling Project Engineer | A term used in this document to mean either the Designated Project Engineer (DPE - See <a href="#">NR/L2/INI/02009</a> ) or the appointed Senior Signalling Project Engineer on a Project where the DPE is not a Signalling Engineer. |

## 4 Definition and High Level Principle

### 4.1 Approval in Principle (AIP)

Approval in Principle signifies that the Route Asset Manager (Signalling) or their delegated representative is satisfied that the signalling scheme chosen to bring about the change to the infrastructure is the most suitable option to achieve the signalling requirements of the Project Requirements Specification.

### 4.2 Approved for Construction (AFC)

Approved for Construction status confirms that the signalling design developed for a project continues to align with the PRS for the project, fits with the project budget, achieves compliance with relevant standards and is appropriate considering the potential solutions that could meet the remit.

### 4.3 Scope of Signalling Scheme Plan Approval

All signalling scheme plans produced for works on Network Rail Signalling Infrastructure shall be approved by an Engineer with appropriate delegated Authority from the Network Rail Professional Head (S&T).

The requirement for approval of signalling scheme plans applies to all projects which make alterations to Network Rail signalling installations irrespective of what organisation or discipline is sponsoring the works.

The Financial/Commercial Project Authority process does not override the requirements for technical approval of the signalling scheme plan.

The policy and process set out in this procedure shall be followed before a scheme plan is signed off as approved by Network Rail.

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It is a requirement that all scheme principles testing shall be carried out against an approved scheme plan. Implementation works should not commence until the works are defined by an approved scheme plan. Any decision to commence implementation before scheme plan approval shall be made and recorded by the DPE having clearly evaluated the commercial and timescale risks involved. Works that amend the configuration of the Signalling asset shall not be taken in to service until the AFC scheme plan is approved.

#### 4.4 Status of Approved Scheme Design

There are two states of Approval; firstly Approval in Principle which confirms that the Signalling Scheme Design of the project meets the agreed scope and objectives of the Project Requirements Specification will be compliant with Signalling Principles. Secondly Approved for Construction confirms that the project (as defined by the scheme plan and supporting documentation) developed from the approval in principle documentation meets the technical requirements of Group and Company standards unless a derogation or non-compliance has been granted for the project to vary these standards and carries sufficient information for detailed design, construction and commissioning to take place.

Approval in Principle status shall be given following a review, as defined in this document, of the project proposals when the single option selection process is completed by the project team.

Approved for Construction shall be given when a due-diligence exercise, as defined in this document has been completed and all consequent actions closed out. The signature depicts approval by the representative of the Professional Head (S&T) of the Signalling arrangements defined by the scheme plan and associated documentation.

A scheme plan that has been Approved For Construction by the delegated representatives of Network Rail Signal Engineering and Network Rail Operations will normally be deemed fit for construction on Network Rail Managed infrastructure without further changes, unless specifically excluded in the project contract documentation. The construction shall be subject to any notes and constraints set out on the scheme plan and other controlled documentation accompanying the scheme plan.

### 5 Scheme Plan Approval Process Selection

The selection of either Major or Minor scheme plan review process shall be determined by the chair of MSRP or appointed delegate on the basis of information supplied on the scheme plan number application form (see [NR/PRC/MPI/ST0029](#)).

#### 5.1 Major Review Process Criteria

The Major scheme review and approval process shall normally be specified for all large scale schemes (typically an interlocking area or larger) and those smaller schemes where the works require derogation to Signalling Principles or a mix of standards and technology within an installation. Most enhancement and junction remodelling schemes fall into the Major Review category. The review process for these schemes is set out in sections 7 and 8 of this document.

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## 5.2 Minor Review Process Criteria

For schemes that fall outside the criteria of section 5.1, the minor scheme process shall apply. The review process for these schemes is also as set out in sections 7 and 8 of this document but with simplifications set out in section 9.

## 5.3 Stage Works Approval

The Signalling Project Engineer on a Specific Project may be granted delegated powers to Approve stage works scheme plans produced by the delivery contractor for the project. This delegation may only be granted once the Master Scheme Plan for the project has been approved. Any stage works submitted for approval under this delegation shall accord with the currently approved Master Scheme Plan for the project.

Delegation for stage works plan approval is granted by the Chair of MSRP on the basis of nomination and competence assessment by the relevant Programme Engineering Manager.

## 5.4 Advice and Assistance

Members of the scheme review panel may be available to provide advice to any project that requires assistance on compliance due to technical difficulties that may be encountered. Projects may request an informal preliminary review of proposals if these difficulties are significant.

## 6 Scheme Plan Production Process

The signalling scheme plan production shall take place in accordance with the requirements of relevant group and company standards. The producer and independent checker shall sign all versions of a scheme plan submitted for review and sign off. This does not preclude unchecked/unsigned versions being tabled for scope discussions. Where this has taken place subsequent issues shall be indicated by an incremented version identity. The guidance set out in section 6 of this document summarises a number of key points from other standards that are particularly relevant to the scheme plan review process.

### 6.1 Stage Plans

If a scheme is to be delivered in several stages then a separate Stage Scheme Plan shall be produced and submitted for each stage. A group of interdependent stages may share a common scheme plan number with the version control process being used to define the separate plans for each stage. Independent stage plans shall be issued with a separate scheme plan number. It should be noted that stage work scheme plans shall not normally be approved before the master scheme plan for the project concerned has been approved.

### 6.2 Plans in Several Parts

A large scheme plan may be split into more than one part (for ease of handling) using the same scheme plan number. The whole plan should be submitted for approval. Sign off of parts in isolation, shall not normally be permitted.

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### 6.3 Basis for Submission

A Scheme Plan submitted for approval shall be signed by the Responsible Design Engineer to confirm that the scheme meets PRS requirements, constructability requirements and that competence and process checks of checker and designer have taken place. The submission shall be supported by the Signalling Project Engineer.

### 6.4 Version Control

Prior to scheme plan Approval for Construction (see section 10 of this document) all issued versions of scheme plans shall normally carry "Numbered" version identities, projects may use a system of main and sub version identities if appropriate. All updated versions of the plan shall carry different version identities with the changes made at this stage summarised on the scheme plan change panel. Full details of changes shall be recorded in the scheme plan design log.

## 7 Major Scheme Approval in Principle Process

To achieve Approval in Principle the Project team need to demonstrate that selected project option meets the Project Requirements Specification, that the Option Selection process has been robustly applied and that the chosen option can be developed to meet the requirements of the Approved for Construction status.

On completion of the Approval in Principle Review the Route Asset Manager (Signalling) or their representative shall endorse the Form [NR/L2/SIG/30003/F001](#) to signify completion of this process. This Approval shall only be given when the Route Asset Manager (Signalling) has confirmed that the Chair of MSRP and Operations Manager approving the Plan are satisfied with the proposals.

### 7.1 Timescale

The Approval in Principle Review should be arranged by contacting the Reviewing Engineer (Minor review) or chair of MSRP. Projects should allow 28 days for the meeting to be arranged.

### 7.2 Responsibility

When the scheme design required to complete the option selection process is completed it shall be submitted to the Signalling Project Engineer along with all associated supporting documentation. The Signalling Project Engineer is responsible for arranging the review meeting in liaison with the chair of the Major Scheme Review Panel or Reviewing Engineer.

### 7.3 Major Scheme Review Panel Membership

The Major Schemes review Panel quorum for each project shall comprise:-

- 1 Chair of MSRP
- 2 Route Asset Manager (Signalling) Representative
- 3 Representative of the Professional Head (S&T) (Deputy Panel Chair)
- 4 Minor Scheme Reviewing Engineer for area of scheme.
- 5 Representative of Local Operations Manager (May be represented by POIS)

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Additional panel members may be drawn from the following as required:-

- 6 Signalling Risk Engineer
- 7 Specialist support where novel or unusual technology is part of the project proposal.
- 8 Minor Scheme Reviewing Engineer not associated with the project area (for national consistency and competence management purposes).

#### 7.4 Project Team Representation

The project team representation shall be led by the Signalling Project Engineer. Sufficient members of the project team shall attend to describe the status of the scheme; the principles and design philosophy of the scheme; signal sighting issues; constructability considerations; affordability of the scheme and any issues that have arisen in the course of production.

The project team shall provide note takers to record the proceedings and action points from the discussions. The minutes shall be issued to the panel members for review within five working days of the meeting. The report should note areas of discussion and agreement not simply areas for future actions, this is to assist in future review of the process undertaken by the project. The report shall include details (drawing number, version, date) of the documents submitted for the review.

#### 7.5 Documentation Requirements

The project team shall supply the members of the review panel the following documentation so that it is received at least ten working days prior to the meeting. The Review submission shall include:-

- The Scheme Sketch or draft Scheme Plan. (See appendix B of this document for guidance on level of detail required)
- Details of control and interlocking technology assumptions
- The Project Requirements Specification that defines the project being developed
- Scheme Plan risk assessment documents produced to meet the requirements of standards including [GI/RT7006](#). The Signalling Project Engineer shall consider which elements of the full Signalling Risk Assessment process are necessary at AIP stage to validate the option selection and approval required. The Signalling Risk Engineer may advise on the selection process.
- The Option Selection Report (or equivalent documentation) detailing the reasons for selection of the chosen option. The level of detail presented for discarded options shall be commensurate with tolerance of the option selection requirements. Evidence will be required to confirm that inputs to the design from other assets are developed to an equivalent level of detail. Evidence of effective estimating practice shall be included where areas of option selection are critically dependant on cost estimate ranking.

Where the project has deviated from the scope defined in the PRS notes of agreements to this effect from the RAM (Signalling) should be produced. The Signalling Project Engineer shall confirm with the chair of MSRP the required format/media for document distribution.